Additional Site Investigation
Report of Findings and Request for Closure

Branscomb Store
Branscomb, California
Case No. 1TMC214

Prepared for:

Harwood Products

SHN Consulting Engineers & Geologists, Inc.
812 W. Wabash
Eureka, CA 95501-2138
707/441-8855

January 2006
092057

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Reference: 092057

January 31, 2006

Ms. Bonnie Rolandelli
California Regional Water Quality Control Board, North Coast Region
5550 Skylane Boulevard, Suite A
Santa Rosa, CA 95403

Subject: **Additional Site Investigation Report of Findings and Request for Closure, Branscomb Store, 1 Main Street, Branscomb, California; Case No. 1TMC214**

Dear Ms. Rolandelli:

Enclosed please find a copy of the Additional Site Investigation Report of Findings for the Branscomb Store site. This work was performed at the request of the California Regional Water Quality Control Board, North Coast Region.

Please do not hesitate to contact me at 707/441-8855 with any questions that you may have.

Sincerely,

SHN Consulting Engineers & Geologists, Inc.

Frans B. Lowman, P.G.
Project Manager

FBL/SD/RMR:lms:med
Enclosure: Report

copy w/encl: Mr. Michael Patrick, Harwood Products
Mr. Wayne Briley, Mendocino County Division of Environmental Health

Reference: 092057

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QA/QC: MKF_____

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Acronyms and Abbreviations

<	denotes a value that is "less than" the method detection limit
mV	millivolts
ppm	parts per million
ug/g	micrograms per gram
ug/L	micrograms per Liter
B-#	Boring-number
BGS	Below Ground Surface
BTEX	Benzene, Toluene, Ethylbenzene, and total Xylenes
DCO_2	Dissolved Carbon Dioxide
DIPE	Diisopropyl Ether
DO	Dissolved Oxygen
EPA	U.S. Environmental Protection Agency
ETBE	Ethyl Tertiary-Butyl Ether
MCDEH	Mendocino County Division of Environmental Health
MCL	Maximum Contaminant Level
MSL	Mean Sea Level
MTBE	Methyl Tertiary-Butyl Ether
MW-#	Monitoring Well-number
NA	Not Analyzed
ND	Not detected above laboratory detection limits
ORP	Oxidation-Reduction Potential
RWQCB	California Regional Water Quality Control Board, North Coast Region
SHN	SHN Consulting Engineers & Geologists, Inc.
TAME	Tertiary-Amyl Methyl Ether
TBA	Tertiary-Butyl Alcohol
TPHG	Total Petroleum Hydrocarbons as Gasoline
UST	Underground Storage Tank
WP-#	Well Point-number

1.0 Introduction

This report presents the results of the additional site investigation activities conducted at the Branscomb Store site (Case No. 1TMC214). This work was performed in accordance with our February 3, 2005, *Work Plan for Additional Site Investigation, Branscomb Store, Branscomb, California.* The site is located at 1 Main Street in Branscomb, California (Figure 1). SHN Consulting Engineers & Geologist, Inc. (SHN) completed the site investigation work on August 31, 2005. Also included is a request for site closure.

1.1 Report Organization

This report is presented in five sections. This section introduces the reader to the site. Section 2.0 discusses field work performed at the site. Section 3.0 presents the results of the investigation. Section 4.0 presents conclusions regarding the nature of the site, as well as the rationale for the request for closure. Section 5.0 presents a list of references cited.

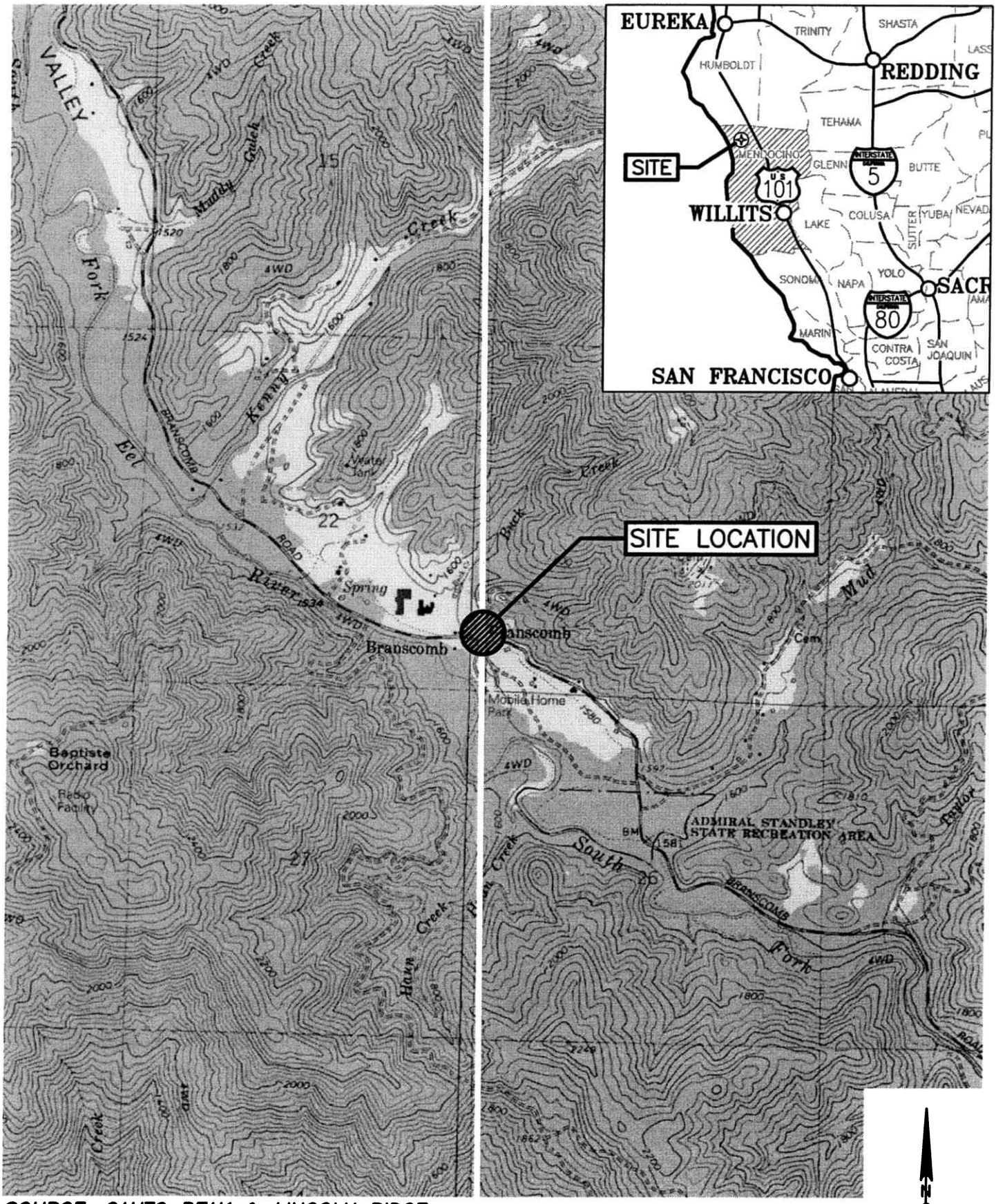
1.2 Background

The Branscomb Store contains an active retail fuel station that operates with an aboveground storage tank system. Two, 1,000-gallon gasoline Underground Storage Tanks (USTs), and one 500-gallon gasoline UST, were previously operated at the site from the late 1950s until 1990. In October 1991, the three USTs were removed from the site (Figure 2). A representative from the Mendocino County Division of Environmental Health (MCDEH) was present during the tank removals, and completed an "Underground Hazardous Materials Storage Tank Abandonment Inspection Report." According to the MCDEH report, the former tanks were of single-walled steel construction, and all contained small holes. Approximately 50 cubic yards of soil were excavated during the tank removal activities.

During the UST removals, a series of soil samples was collected from the former tank locations. The soil samples were analyzed for Total Petroleum Hydrocarbons as Gasoline (TPHG); Benzene, Toluene, Ethylbenzene, and total Xylenes (BTEX); and total lead. Laboratory analyses of the soil samples that were collected revealed the presence of petroleum hydrocarbons, with a maximum concentration of TPHG of 8,900 micrograms per gram (ug/g).

On August 24 and 25, 1994, SHN performed an initial investigation at the site. A backhoe was used to excavate two test pits in the vicinity of the former USTs, and one test pit across the road from the Branscomb Store. During the excavation, an additional 1,000-gallon UST was discovered near the location of former UST #2. Soil samples were collected from the test pits. The newly discovered gasoline UST was removed on September 27, 1994. A representative from the MCDEH was present during the tank removal.

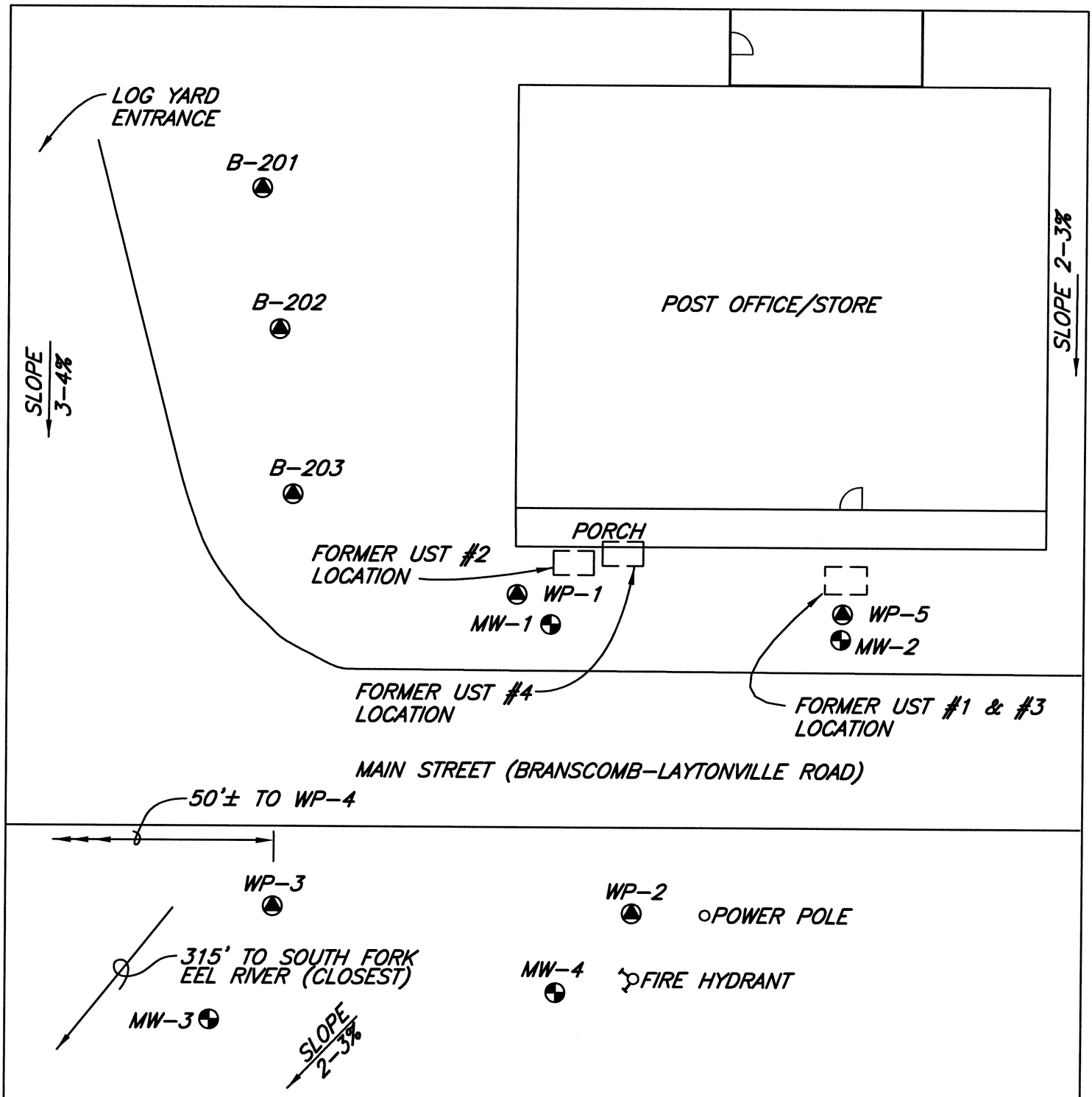
SHN conducted a limited subsurface investigation at the site in April 1997. Five temporary well points (WP-1 through WP-5) were installed and sampled to assess groundwater conditions in the area of the former USTs. Information collected during this investigation revealed that groundwater



SOURCE: CAHTO PEAK & LINCOLN RIDGE
USGS 7.5 MINUTE
QUADRANGLE

1"=2000'±

SHN Consulting Engineers & Geologists, Inc.	Branscomb Store 1 Main Street Banscomb, California		Site Location Map SHN 092057
	MAY 2005	092057-LOCATION	Figure 1



EXPLANATION

MW-2 GROUNDWATER MONITORING WELL LOCATION AND DESIGNATION

B-201 SOIL BORING/WELL POINT LOCATION AND DESIGNATION

N

1"=20'

ALL LOCATIONS ARE APPROXIMATE

SHN Consulting Engineers & Geologists, Inc.	Branscomb Store 1 Main Street Branscomb, California	Site Plan SHN 920057	
	October, 2005	920057-site	Figure 2

at the Branscomb Store site had been impacted by petroleum hydrocarbons. However, the extent of petroleum hydrocarbon-impacted groundwater appeared to be limited to the immediate area around the former UST locations.

In January 2000, SHN supervised the installation of four groundwater monitoring wells (MW-1 through MW-4) at the site, as approved by the California Regional Water Quality Control Board, North Coast Region (RWQCB) on February 11,1998. The monitoring well locations were chosen based on the results of the limited subsurface investigation conducted by SHN in April 1997 7 (SHN, 2000).

Quarterly monitoring was initiated at the Branscomb Store site on February 22, 2000, as required by the RWQCB. Groundwater monitoring occurred at the site for one year, and was not conducted for the following three years. On August 13, 2004, quarterly groundwater monitoring was resumed at the site. Historic groundwater analytical data is included in Appendix A.

On February 3, 2005, SHN submitted a work plan to the RWQCB, for the installation of an additional groundwater monitoring well at the Branscomb Store site, to further assess soil and groundwater conditions downgradient of the former UST locations and monitoring well MW-2. In a letter dated May 26, 2005, the RWQCB approved the work plan, and requested that additional site investigation be performed at the proposed locations, prior to the installation of any additional groundwater monitoring wells.

2.0 Field Activities

2.1 Soil Borings

On August 31, 2005, SHN supervised the drilling of three exploratory soil borings (B-201, B-202, and B-203) at the Branscomb Store site (Figure 2). All of the soil borings were drilled using a truck-mounted Geoprobe® rig operated by Fisch Environmental of Valley Springs, California. The soil borings were extended to maximum depths ranging from 12 to 16 feet Below Ground Surface (BGS).

All three of the soil borings were continuously cored. A soil sample was then collected from each of the exploratory borings. For each sample location, a hollow stainless steel sampler lined with a 1.5-inch inside diameter plastic liner was driven into the soil. Following the retrieval of each core, the plastic liner was removed from the sampler, and selected samples were cut from the desired depth and sealed on both ends with Teflon® tape and plastic caps. Soils in the remaining core tubes were used for lithologic descriptions. Field notes and soil boring logs from the August 31, 2005, site investigation are included in Appendix B.

Each soil sample was labeled with the project name, project number, sample number, sample depth, sample time and date. All of the samples were placed in Ziploc® bags and stored in an iced cooler. The soil samples were submitted to the laboratory for analysis. Each soil sample was analyzed for constituents described in Section 2.3 of this report. Sample handling, transport, and delivery to the analytical laboratory were documented using proper chain-of-custody procedures.

2.2 Temporary Well Point Installation and Sampling

Upon completion of drilling activities, temporary well points were installed in each of the three exploratory soil borings for the purpose of collecting a groundwater sample. All of the groundwater samples were collected using new polyethylene tubing with a check valve, and placed into laboratory-supplied containers.

Each groundwater sample was labeled with the project name, project number, sample number, sample depth, sample time and date, and placed in an iced cooler. Again, sample handling, transport, and delivery to the analytical laboratory were documented using proper chain-of-custody procedures. The groundwater samples were analyzed for the constituents described Section 2.3 of this report.

After collecting the groundwater samples, all three exploratory soil borings were backfilled with neat cement and capped to match the existing surface.

2.3 Laboratory Analysis

Each soil and groundwater sample submitted to the analytical laboratory was analyzed for TPHG, BTEX, Methyl Tertiary-Butyl Ether (MTBE), and fuel oxygenates Tertiary-Butyl Alcohol (TBA), Diisopropyl Ether (DIPE), Ethyl Tertiary-Butyl Ether (ETBE), and Tertiary-Amyl Methyl Ether (TAME), in general accordance with U.S. Environmental Protection Agency (EPA) Method No. 8260B.

All soil and groundwater analyses were conducted by North Coast Laboratories, Ltd., a State-certified analytical laboratory located in Arcata, California.

2.4 Equipment Decontamination Procedures

All drilling and sampling equipment were cleaned prior to being transported to the Branscomb Store site, and between borings. All small items that required on-site cleaning were initially washed in a water solution containing Liquinox® cleaner, followed by a distilled water rinse, then by a second distilled water rinse.

2.5 Investigation-Derived Waste Management

No soil cuttings were generated during this site investigation.

Water used in the decontamination of equipment, tools, and purge water was contained in an approved Department of Transportation 17 E/H, 55-gallon drum. The water was transported to SHN's purge water storage facility and discharged, under permit, to the City of Eureka wastewater collection system. A total of 4 gallons of water was generated during the investigation. A discharge receipt is included in Appendix B.

3.0 Results of the Investigation

3.1 Subsurface Lithology

Review of the 1967 State of California, Division of Mines and Geology "Geologic Map of California, Ukiah Sheet," reveals that Quaternary alluvial deposits underlie the Branscomb Store site. The exploratory soil borings that were advanced at the site on August 31, 2005, encountered fine to coarse gravels with fine sands, and silts, to a maximum depth of approximately 14 feet BGS. Soil borings B-201 and B-202 encountered mudstone, dry to slightly moist, weathered, and crumbly, below 14 feet BGS. Groundwater was encountered in the exploratory soil borings at depths ranging from approximately 10 to 11.6 feet BGS. Field notes and soil boring logs from the August 31, 2005, site investigation are included in Appendix B.

3.2 Soil Analytical Results

The laboratory analytical results for the soil samples collected from the exploratory borings are summarized in Table 1. TPHG, BTEX, and fuel oxygenates (including MTBE) were not present at concentrations above their respective laboratory method detection limits in any of the three soil samples that were collected. In addition, no fuel oxygenates were detected in any of the soil samples that were submitted for laboratory analyses.

Table 1
Soil Analytical Results, August 31, 2005
Branscomb Store, Branscomb, California
(in ug/g)[1]

Sample Location/Depth (feet)	TPHG[2]	B[3]	T[3]	E[3]	X[3]	MTBE[4]	Fuel Oxygenates[5]
B-201 @ 13–14′	<1.0[6]	<0.005	<0.005	<0.005	<0.010	<0.025	ND[7]
B-202 @ 13–14′	<1.0	<0.005	<0.005	<0.005	<0.010	<0.025	ND
B-203 @ 10–11′	<1.0	<0.005	<0.005	<0.005	<0.010	<0.025	ND

1. ug/g: micrograms per gram.
2. TPHG: Total Petroleum Hydrocarbons as Gasoline, analyzed in general accordance with U.S. Environmental Protection Agency (EPA) Method No. 8260B.
3. Benzene (B), Toluene (T), Ethylbenzene (E), and total Xylenes (X), analyzed in general accordance with EPA Method No. 8260B.
4. MTBE: Methyl Tertiary-Butyl Ether, analyzed in general accordance with EPA Method No. 8260B.
5. Other fuel oxygenates including Tertiary-Butyl Alcohol (TBA), Diisopropyl Ether (DIPE), Ethyl Tertiary-Butyl Ether (ETBE), and Tertiary-Amyl Methyl Ether (TAME), analyzed in general accordance with EPA Method No. 8260B.
6. <: Denotes a value that is "less than" the method detection limit.
7. ND: Not detected above laboratory detection limits. See laboratory analytical report for laboratory detection limits for each analyte.

3.3 Groundwater Analytical Results

The laboratory analytical results for the groundwater samples collected from the temporary well points are summarized in Table 2.

Table 2
Groundwater Analytical Results, August 31, 2005
Branscomb Store, Branscomb, California
(in ug/L)[1]

Sample Location	TPHG[2]	B[3]	T[3]	E[3]	X[3]	MTBE[4]	Fuel Oxygenates[5]
B-201	85	<0.50[6]	<0.50	<0.50	<0.50	<1.0	ND[7]
B-202	<50	<0.50	<0.50	<0.50	<0.50	<1.0	ND
B-203	<50	<0.50	<0.50	<0.50	<0.50	<1.0	ND

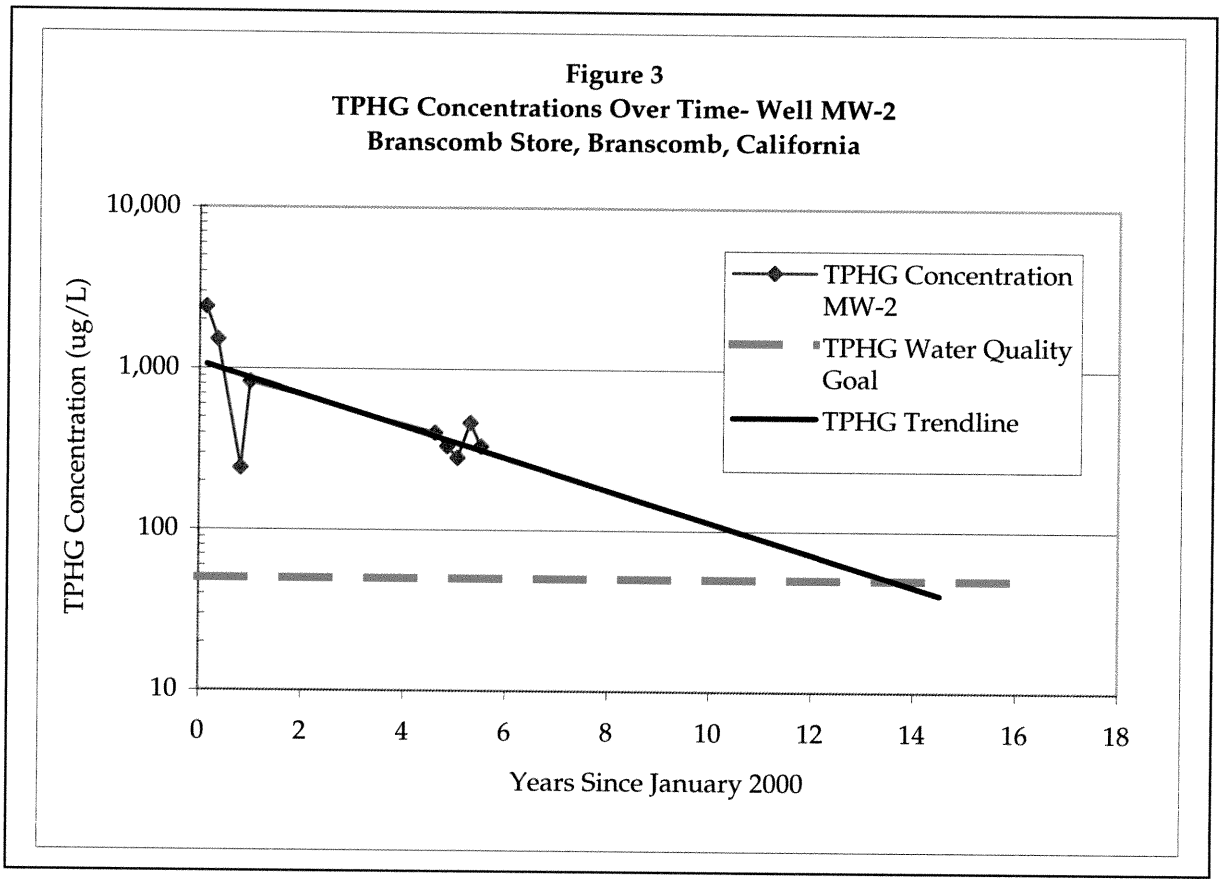
1. ug/L: micrograms per Liter.
2. TPHG: Total Petroleum Hydrocarbons as Gasoline, analyzed in general accordance with U.S. Environmental Protection Agency (EPA) Method No. 8260.
3. Benzene (B), Toluene (T), Ethylbenzene (E), and total Xylenes (X), analyzed in general accordance with EPA Method No. 8260B.
4. MTBE: Methyl Tertiary-Butyl Ether, analyzed in general accordance with EPA Method No. 8260B.
5. Other fuel oxygenates including Tertiary-Butyl Alcohol (TBA), Diisopropyl Ether (DIPE), Ethyl Tertiary-Butyl Ether (ETBE), and Tertiary-Amyl Methyl Ether (TAME), analyzed in general accordance with EPA Method No. 8260B.
6. <: Denotes a value that is "less than" the method detection limit.
7. ND: Not detected above laboratory detection limits. See laboratory analytical report for laboratory detection limits for each analyte.

TPHG was detected in the groundwater sample collected from well point B-201, at a concentration of 85 micrograms per Liter (ug/L). None of the other groundwater samples that were collected contained detectable concentrations of TPHG. In addition, BTEX and fuel oxygenates were not detected above their respective laboratory method detection limits in any of the groundwater samples that were submitted for analyses. The complete laboratory report and corresponding chain-of-custody documentation are included in Appendix C.

4.0 Conclusions and Recommendations

The results of this site investigation indicate that very low concentrations of residual petroleum hydrocarbons are present in groundwater in the former source area (well MW-2). Using the data collected from borings/well points B-201, B-202, and B-203, it appears that the extent of the petroleum hydrocarbon plume in groundwater is limited and has been defined. The petroleum hydrocarbon plume consists of TPHG components; however, the plume is degraded and does not contain any of the BTEX components. MTBE has previously been detected in site wells at concentrations well below the Maximum Contaminant Level (MCL) for drinking water, and has not been detected in any site wells since August 2004. Biodegradation indicator monitoring conducted at the site shows that biodegradation of the petroleum hydrocarbon plume is occurring.

Figure 3
TPHG Concentrations Over Time- Well MW-2
Branscomb Store, Branscomb, California



TPHG concentrations in the source area well (MW-2) continue to decrease over time and are expected to reach water quality goals within 15 years (Figure 3). In order to evaluate declining trends of contaminant concentrations in groundwater over time, TPHG data from MW-2 were analyzed using the Mann-Kendall statistical procedure. The Mann-Kendall statistical procedure for evaluating trends does not depend on the underlying distribution of the data, nor is it impacted by non-detect or missing values. Statistically, the null hypothesis is that no trend exists over time. The alternate hypothesis is that a significant upward or downward trend exists. If an upward or downward trend exists, the statistical procedure tests the significance of the trend at the 80%, 90%, 95%, and 99% confidence intervals. The confidence interval [100(1-α)] is constructed from sample data and is designed to contain the mean concentration of a data set with a designated level of confidence. The evaluation showed a downward trend in TPHG concentrations in MW-2 at an 80% confidence interval. The evaluation graph is included in Appendix D.

Based on the information collected to date, SHN recommends that the Branscomb Store site be considered for closure. The rationale for closure is:

- The sources of contamination (3 USTs) were removed in 1991 and 1994.
- Approximately 50 cubic yards of petroleum-contaminated soil were excavated from the source area in 1991, during the UST removals.
- TPHG concentrations continue to decrease, indicating that the petroleum hydrocarbon plume is degrading naturally.

- It is anticipated that TPHG concentrations in MW-2 will reach MCLs in approximately 15 more years.
- Benzene, toluene, and ethylbenzene have never been detected in any site wells. On one occasion, total xylenes were detected at a concentration well below the MCL.
- MTBE has not been detected in any site wells since August 2004. Prior to August 2004, MTBE had been detected at concentrations well below the MCL.
- The site has been adequately characterized. The extent of soil and groundwater contamination related to the USTs has been defined.
- The groundwater gradient at the site is relatively flat, and groundwater flow direction has been consistently in a westward to northwestward direction.
- TPHG or BTEX have not been detected in monitoring wells MW-3 and MW-4.
- Natural attenuation mechanisms are active at the site, and will continue to degrade residual groundwater contamination.
- No sensitive receptors have been, or are likely to be, impacted from residual petroleum hydrocarbons (SHN, 2005). The potential threat to human health and the environment are minimal.

Based on this information, SHN recommends that the RWQCB issue a "no further action" letter for the Branscomb Store site. Upon receipt of a "no further action" letter from the RWQCB, SHN will supervise the destruction of all groundwater-monitoring wells at the site using proper procedures as required by the MCDEH.

5.0 References Cited

SHN Consulting Engineers & Geologists, Inc. (April 2000). *Well Installation Report of Findings, Harwood Products Branscomb Store, Branscomb, CA.* Eureka: SHN.

---. (February 2005). *Work Plan for Additional Site Investigation, Branscomb Store, Branscomb, CA.* Eureka: SHN.

Appendix A

Historic Groundwater Monitoring Data

Table A-1
Historic Groundwater Elevations
Branscomb Store, Branscomb, California

Sample Location	Date	Top of Casing Elevation (feet MSL)[1]	Depth to Water (feet)[2]	Groundwater Elevation (feet MSL)
MW-1	2/22/00	1,529.31	7.74	1,521.57
	5/16/00		8.66	1,520.65
	10/27/00		9.00	1,520.31
	1/2/01		8.63	1,520.68
	8/13/04		8.98	1,520.33
	11/8/04		8.73	1,520.58
	1/19/05		8.28	1,521.03
	4/20/05		8.39	1,520.92
	7/6/05		8.63	1,520.68
MW-2	2/22/00	1,529.67	8.13	1,521.54
	5/16/00		8.42	1,521.25
	10/27/00		9.00	1,520.67
	1/2/01		8.52	1,521.15
	8/13/04		8.90	1,520.77
	11/8/04		8.63	1,521.04
	1/19/05		7.94	1,521.73
	4/20/05		8.08	1,521.59
	7/6/05		8.45	1,521.22
MW-3	2/22/00	1,526.61	5.92	1,520.69
	5/16/00		6.34	1,520.27
	10/27/00		6.55	1,520.06
	1/2/01		6.32	1,520.29
	8/13/04		6.51	1,520.10
	11/8/04		6.34	1,520.27
	1/19/05		6.00	1,520.61
	4/20/05		6.10	1,520.51
	7/6/05		6.31	1,520.30
MW-4	2/22/00	1,528.32	6.98	1,521.34
	5/16/00		7.40	1,520.92
	10/27/00		7.69	1,520.63
	1/2/01		7.43	1,520.89
	8/13/04		7.69	1,520.63
	11/8/04		7.41	1,520.91
	1/19/05		7.05	1,521.27
	4/20/05		7.18	1,521.14
	7/6/05		7.35	1,520.97

1. MSL: Mean Sea Level 2. Below top of casing

Table A-2
Historic Groundwater Analytical Results
Branscomb Store, Branscomb, California
(in ug/L)[1]

Sample Location	Date	TPHG[2]	Benzene[3]	Toluene[3]	Ethyl-benzene[3]	Total Xylenes[3]	MTBE[4]	TBA[4]	DIPE[4]	ETBE[4]	TAME[4]
MW-1	2/22/00	**170**	<0.50[5]	<0.50	<0.50	**1.1**	<3.0	NA[6]	NA	NA	NA
	5/16/00	<50	<0.50	<0.50	<0.50	<0.50	<0.50	<10	<1.0	<1.0	<1.0
	10/27/00	<50	<0.50	<0.50	<0.50	<0.50	<0.50	<10	<1.0	<1.0	<1.0
	1/2/01	<50	<0.50	<0.50	<0.50	<0.50	<3.0	NA	NA	NA	NA
	8/13/04	<50	<0.50	<0.50	<0.50	<0.50	<1.0	<10	<1.0	<1.0	<1.0
	11/8/04	<50	<0.50	<0.50	<0.50	<0.50	<1.0	<10	<1.0	<1.0	<1.0
	1/19/05	<50	<0.50	<0.50	<0.50	<0.50	<1.0	<10	<1.0	<1.0	<1.0
	4/20/05	<50	<0.50	<0.50	<0.50	<0.50	<1.0	<10	<1.0	<1.0	<1.0
	7/6/05	<50	<0.50	<0.50	<0.50	<0.50	<1.0	<10	<1.0	<1.0	<1.0
MW-2	2/22/00	**2,400**	<0.50	<5.0	<4.0	<4.0	**3.0**	NA	NA	NA	NA
	5/16/00	**1,500**	<0.50	<0.50	<0.50	<0.50	**2.2**	<10	<1.0	<1.0	<1.0
	10/27/00	**240**	<0.50	<0.50	<0.50	<0.50	**2.9**	<10	<1.0	<1.0	<1.0
	1/2/01	**820**	<0.50	<0.50	<0.50	<0.50	**3.2**	NA	NA	NA	NA
	8/13/04	**400**	<0.50	<0.50	<0.50	<0.50	<1.0	<10	<1.0	<1.0	<1.0
	11/8/04	**330**	<0.50	<0.50	<0.50	<0.50	<1.0	<10	<1.0	<1.0	<1.0
	1/19/05	**280**	<0.50	<0.50	<0.50	<0.50	<1.0	<10	<1.0	<1.0	<1.0
	4/20/05	**460**	<0.50	<0.50	<0.50	<0.50	<1.0	<10	<1.0	<1.0	<1.0
	7/6/05	**330**	<0.50	<0.50	<0.50	<0.50	<1.0	<10	<1.0	<1.0	<1.0
MW-3	2/22/00	<50	<0.50	<0.50	<0.50	<0.50	**4.5**	NA	NA	NA	NA
	5/16/00	<50	<0.50	<0.50	<0.50	<0.50	<0.50	<10	<1.0	<1.0	<1.0
	10/27/00	<50	<0.50	<0.50	<0.50	<0.50	<0.50	<10	<1.0	<1.0	<1.0
	1/2/01	<50	<0.50	<0.50	<0.50	<0.50	<3.0	NA	NA	NA	NA
	8/13/04	<50	<0.50	<0.50	<0.50	<0.50	<1.0	<10	<1.0	<1.0	<1.0
	11/8/04	<50	<0.50	<0.50	<0.50	<0.50	<1.0	<10	<1.0	<1.0	<1.0
	1/19/05	<50	<0.50	<0.50	<0.50	<0.50	<1.0	<10	<1.0	<1.0	<1.0
	4/20/05	<50	<0.50	<0.50	<0.50	<0.50	<1.0	<10	<1.0	<1.0	<1.0
	7/6/05	<50	<0.50	<0.50	<0.50	<0.50	<1.0	<10	<1.0	<1.0	<1.0
MW-4	2/22/00	<50	<0.50	<0.50	<0.50	<0.50	**5.3**	NA	NA	NA	NA
	5/16/00	<50	<0.50	<0.50	<0.50	<0.50	<0.50	<10	<1.0	<1.0	<1.0
	10/27/00	<50	<0.50	<0.50	<0.50	<0.50	<0.50	<10	<1.0	<1.0	<1.0
	1/2/01	<50	<0.50	<0.50	<0.50	<0.50	<3.0	NA	NA	NA	NA
	8/13/04	<50	<0.50	<0.50	<0.50	<0.50	<1.0	<10	<1.0	<1.0	<1.0
	11/8/04	<50	<0.50	<0.50	<0.50	<0.50	<1.0	<10	<1.0	<1.0	<1.0
	1/19/05	<50	<0.50	<0.50	<0.50	<0.50	<1.0	<10	<1.0	<1.0	<1.0
	4/20/05	<50	<0.50	<0.50	<0.50	<0.50	<1.0	<10	<1.0	<1.0	<1.0
	7/6/05	<50	<0.50	<0.50	<0.50	<0.50	<1.0	<10	<1.0	<1.0	<1.0

1. ug/L: micrograms per Liter
2. TPHG: Total Petroleum Hydrocarbons as Gasoline, analyzed in general accordance with EPA Method No. 8260B.
3. Benzene, Toluene, Ethylbenzene, and total Xylenes, analyzed in general accordance with EPA Method No. 8260B.
4. Fuel Oxygenates: MTBE (Methyl Tertiary-Butyl Ether), TBA (Tertiary-Butyl Alcohol), DIPE (Diisopropyl Ether), ETBE (Ethyl Tertiary-Butyl Ether), and TAME (Tertiary-Amyl Methyl Ether), analyzed in general accordance with EPA Method No. 8260B.
5. <: Denotes a value that is "less than" the laboratory method detection limit.
6. NA: Not Analyzed

Table A-3
Historic DO, DCO_2, and ORP Measurement Results
Branscomb Store, Branscomb, California

Sample Location	Date	DO[1] (ppm)[2]	DCO_2[3] (ppm)	ORP[4] (mV)[5]
MW-1	5/16/00	0.80	40	235
	10/27/00	0.57	60	135
	1/2/01	0.63	30	98
	8/13/04	0.56	80	56
	11/8/04	0.90	40	125
	1/19/05	1.21	50	83
	4/20/05	0.76	40	202
	7/6/05	0.79	60	168
MW-2	5/16/00	0.49	50	-30
	10/27/00	0.50	70	-35
	1/2/01	0.58	70	82
	8/13/04	0.55	120	-102
	11/8/04	0.80	90	-20
	1/19/05	0.80	140	28
	4/20/05	0.63	120	-57
	7/6/05	0.78	120	-31
MW-3	5/16/00	0.58	20	140
	10/27/00	0.59	20	125
	1/2/01	1.68	30	83
	8/13/04	0.54	25	22
	11/8/04	1.43	30	109
	1/19/05	2.96	30	53
	4/20/05	2.07	30	218
	7/6/05	1.98	20	144
MW-4	5/16/00	0.53	20	175
	10/27/00	0.56	20	110
	1/2/01	2.54	20	65
	8/13/04	0.59	20	53
	11/8/04	1.34	20	108
	1/19/05	3.39	30	89
	4/20/05	1.01	30	216
	7/6/05	0.75	20	164

1. DO: Dissolved Oxygen, field measured using portable instrumentation
2. ppm: parts per million
3. DCO_2: Dissolved Carbon Dioxide, field measured using a field test kit
4. ORP: Oxidation-Reduction Potential measured using portable instrumentation
5. mV: millivolts

Appendix B

Field Notes and Boring Logs

Daily Field Report

Job No. 092057

Page 1 of 1

Project Name	Client/Owner	Daily Field Report Sequence No	
Branscomb Store			
General Location Of Work: Branscomb, CA	Owner/Client Representative	Date: 8-31-05	Day Of Week: WED
General Contractor: Fisch Environmental	Grading Contractor	Project Engineer: Frans Lowman	
Type Of Work: Soil Borings and Wellpoints	Grading Contractor, Superintendent, Or Foreman	Supervisor: R. Rueber	
Source & Description Of Fill Material	Weather: clear	Technician: A. Melody	
	Key Persons Contacted (Civil Engr, Architect, Developer, Etc)		

Describe Equipment Used For Hauling, Spreading, Watering, Conditioning, & Compacting

800 - Arrive @ site Kick (Fisch) on site, no utilities marked. Passerby noted that there may be (is) a water line thru area - will HA.

900 - Begin B-201, set 3/4" PVC wellpoint (see log) & took water samples
TD = 16.0'
SI = 11-16
backfilled with mixed Portland cement (not just powder)
soil: B-201 @ 13-14'
DTW ~ 11.6' BGS

1030 - Begin B-202, WP as above (B-201) DTW ~ 11.0' BGS

1045 - Trey Strickland on site - Mend. Co. EHS

1145 - " " off site, Begin B-203, TD = 12.0' DTW ~ 10.0' BGS SI = 7-12'

1230 - End borings, clean up - paperwork etc. . . .

1300 - off site

3 borings - one soil sample from ea. boring
3 wellpoints - one water " " wellpoint

	Copy given to:	Reported By: A. Melody

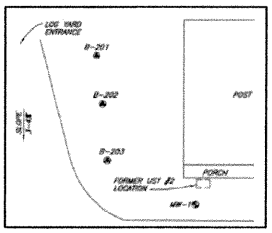
Consulting Engineers & Geologists, Inc.
812 West Wabash, Eureka, CA ph. (707) 441-8855 fax. (707) 441-8877

WELLPOINT LOG

B-201

PROJ. NAME: Branscomb Store
PROJ. NUMBER: 092057
DRILLER: Fisch Environmental
DRILLING METHOD: GeoProbe
SAMPLER TYPE: Macro Core
LOGGED BY: A. Melody

LOCATION: Branscomb, CA
GROUND ELEVATION:~ 1560 Feet (NAVD 1929)
DEPTH OF BORING/WELLPOINT:16.0 / 16.0 Feet BGS
DEPTH TO FIRST WATER: ~11.6 Feet BGS
SCREEN INTERVAL: 11.0-16.0 Feet BGS
DATE: 8/31/05



DEPTH (Feet BGS)	WATER LEVEL	SAMPLE: OVA READING (ppm)	SAMPLE: BLOWS / 6"	SAMPLE: RECOVERY (%)	SAMPLE: DRILLING	SAMPLE: LABORATORY	USCS	LITHOLOGY PATTERN	SOIL DESCRIPTION	REMARKS	WELLPOINT CONSTRUCTION
0							GM		GRAVEL, fine to coarse, subangular to subrounded, silty, with sand, fine to coarse, very dense, dry, light grey		
		0									
5							ML		SILT, trace sand, fine, trace clay, trace gravel, fine to coarse, subangular to subrounded, hard, light brown		3/4" SCH 40 PVC Blank
		0					GM		GRAVEL, fine to coarse, subangular to subrounded, silty, trace sand, fine, slightly moist, medium brown		
10	▽	0							Increase in sand, fine to coarse, slightly moist to moist		3/4" SCH 40 PVC Screen (0.010 slot)
		0					RX		MUDSTONE, dry to slightly moist, light grey, fractures to small waxy crumbly shards		
15									Total depth of boring = 16.0 Feet BGS Boring backfilled with neat cement		

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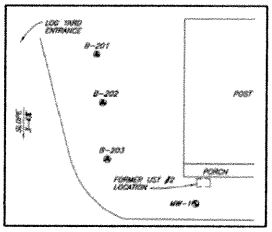
WELLPOINT LOG
B-202



PROJ. NAME: Branscomb Store
PROJ. NUMBER: 092057
DRILLER: Fisch Environmental
DRILLING METHOD: GeoProbe
SAMPLER TYPE: Macro Core
LOGGED BY: A. Melody

LOCATION: Branscomb, CA
GROUND ELEVATION: ~1560 Feet (NAVD 1929)
DEPTH OF BORING/WELLPOINT: 16.0 / 16.0 Feet BGS
DEPTH TO FIRST WATER: ~11.0 Feet BGS
SCREEN INTERVAL: 11.0-16.0 Feet BGS
DATE: 8/31/05

DEPTH (Feet BGS)	WATER LEVEL	SAMPLE: OVA READING (ppm)	SAMPLE: BLOWS / 6"	SAMPLE: RECOVERY (%)	SAMPLE: DRILLING	SAMPLE: LABORATORY	USCS	LITHOLOGY PATTERN	SOIL DESCRIPTION	REMARKS	WELLPOINT CONSTRUCTION
0									GRAVEL, fine to coarse, subangular to subrounded, silty, sandy, fine to coarse, dry, dense, light grey		
		0					ML		SILT, with sand, fine to medium, trace gravel, fine to medium, subrounded, medim stiff, damp, dark brown		
5									Color change to light brown		3/4" SCH 40 PVC Blank
		0					SW		SAND, fine to medium, gravelly (sandstone), fine to medium, subangular to subrounded, dense, dry, light brown		
10	▽	0							Increase in gravels		3/4" SCH 40 PVC Screen (0.010 slot)
		0							MUDSTONE, weathered, crumbly, dry, light grey		
15									Total depth of boring = 16.0 Feet BGS Boring backfilled with neat cement		

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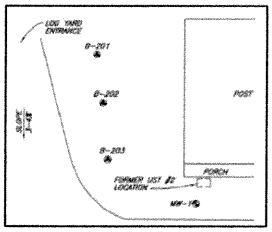
WELLPOINT LOG
B-203



PROJ. NAME: Branscomb Store
PROJ. NUMBER: 092057
DRILLER: Fisch Environmental
DRILLING METHOD: GeoProbe
SAMPLER TYPE: Macro Core
LOGGED BY: A. Melody

LOCATION: Branscomb, CA
GROUND ELEVATION: ~1560 Feet (NAVD 1929)
DEPTH OF BORING/WELLPOINT: 12.0 / 12.0 Feet BGS
DEPTH TO FIRST WATER: ~10.0 Feet BGS
SCREEN INTERVAL: 7.0-12.0 Feet BGS
DATE: 8/31/05

DEPTH (Feet BGS)	WATER LEVEL	SAMPLE: OVA READING (ppm)	SAMPLE: BLOWS / 6"	SAMPLE: RECOVERY (%)	SAMPLE: DRILLING	SAMPLE: LABORATORY	USCS	LITHOLOGY PATTERN	SOIL DESCRIPTION	REMARKS	WELLPOINT CONSTRUCTION
0							GM		GRAVEL, fine to coarse, subangular to subrounded, silty, sandy, fine to coarse, dry, dense, light grey		
							ML		SILT, medium stiff, damp, dark brown to black		3/4" SCH 40 PVC Blank
		0					GW		GRAVEL, fine to medium, subrounded, sandy, fine to medium, dense, damp, light brown		
5											
		0									
	▽										3/4" SCH 40 PVC Screen (0.010 slot)
10		0					GP		GRAVEL, fine to medium, with fines, loose, wet, light brown		
									Total depth of boring = 12.0 Feet BGS Boring backfilled with neat cement		
15											

BORING LOG

Client Name: **BRANSCOMB STORE**

The water from your site: **1 MAIN STREET BRANSCOMB, CA**
RWQCB CASE # 1TMC214

SHN ref # **092057** Collected On: **8/31/05**

Has been tested and certified as acceptable to be discharged into the City of Eureka municipal sewer system.

Amount Discharged: **4 GALLONS**

Date Discharged: **10/28/05**

Certified by: **DAVID R. PAINE**

SHN CONSULTING ENGINEERS & GEOLOGISTS, INC.
City of Eureka Wastewater Discharge Permit #65

Appendix C

Laboratory Analytical Report

NORTH COAST
LABORATORIES LTD.

REC'D SEP 16 2005

September 14, 2005

SHN Consulting Engineers and Geologists
812 West Wabash Avenue
Eureka, CA 95501

Attn: Frans Lowman

RE: 092057, Branscomb Store

Order No.: 0509030
Invoice No.: 52759
PO No.:

ELAP No. 1247-Expires July 2006

SAMPLE IDENTIFICATION

Fraction	Client Sample Description
01A	B-201 @ 13-14'
02A	B-202 @ 13-14'
03A	B-203 @ 10-11'
04A	B-201
05A	B-202
06A	B-203

ND = Not Detected at the Reporting Limit

Limit = Reporting Limit

All solid results are expressed on a wet-weight basis unless otherwise noted.

REPORT CERTIFIED BY

Laboratory Supervisor(s) | QA Unit | Jesse G. Chaney, Jr. Laboratory Director

CASE NARRATIVE

Gasoline Components/Additives - Water:
Sample B-201 does not present a peak pattern consistent with that of gasoline. The peaks elute towards the end of the gasoline range. In our judgement the material appears to be a product heavier than gasoline. Due to the differences in the purging efficiency of these heavier materials the results may be variable. The reported result represents the amount of material in the gasoline range.

Gasoline Components/Additives - Soil:
The laboratory control sample/laboratory control sample duplicate (LCS/LCSD) recoveries were above the upper acceptance limit for ETBE. These recoveries indicate that the sample results may be erroneously high. There were no detectable levels of the analyte in the samples; therefore, the data were accepted.

The relative percent difference (RPD) for the laboratory control samples was above the upper acceptance limit for TBA. This indicates that the results could be variable. Since there were no detectable levels of analyte in the samples, the data were accepted.

The surrogate recoveries were above the upper acceptance limit for all of the samples, the method blank and the LCS/LCSD. These recoveries indicate that the sample results may be erroneously high. There were no detectable levels of the analytes in the samples; therefore, the data were accepted.

NORTH COAST LABORATORIES
5680 West End Road • Arcata, California 95521-9202 • 707-822-4649 • FAX 707-822-6831

Date: 14-Sep-05
WorkOrder: 0509030

ANALYTICAL REPORT

Client Sample ID: B-201 @ 13-14' **Received:** 9/1/05 **Collected:** 8/31/05 10:00
Lab ID: 0509030-01A

Test Name: Gasoline Components/Additives **Reference:** LUFT/EPA 8260B Modified

Parameter	Result	Limit	Units	DF	Extracted	Analyzed
Methyl tert-butyl ether (MTBE)	ND	0.025	µg/g	1.0	9/12/05	9/12/05
Tert-butyl alcohol (TBA)	ND	0.50	µg/g	1.0	9/12/05	9/12/05
Di-isopropyl ether (DIPE)	ND	0.020	µg/g	1.0	9/12/05	9/12/05
Ethyl tert-butyl ether (ETBE)	ND	0.020	µg/g	1.0	9/12/05	9/12/05
Benzene	ND	0.0050	µg/g	1.0	9/12/05	9/12/05
Tert-amyl methyl ether (TAME)	ND	0.020	µg/g	1.0	9/12/05	9/12/05
Toluene	ND	0.0050	µg/g	1.0	9/12/05	9/12/05
Ethylbenzene	ND	0.0050	µg/g	1.0	9/12/05	9/12/05
m,p-Xylene	ND	0.010	µg/g	1.0	9/12/05	9/12/05
o-Xylene	ND	0.0050	µg/g	1.0	9/12/05	9/12/05
Surrogate: 1,4-Dichlorobenzene-d4	148	80-120	% Rec	1.0	9/12/05	9/12/05

Test Name: TPH as Gasoline **Reference:** LUFT/EPA 8260B Modified

Parameter	Result	Limit	Units	DF	Extracted	Analyzed
TPHC Gasoline	ND	1.0	µg/g	1.0	9/12/05	9/12/05

Client Sample ID: B-202 @ 13-14' **Received:** 9/1/05 **Collected:** 8/31/05 11:10
Lab ID: 0509030-02A

Test Name: Gasoline Components/Additives **Reference:** LUFT/EPA 8260B Modified

Parameter	Result	Limit	Units	DF	Extracted	Analyzed
Methyl tert-butyl ether (MTBE)	ND	0.025	µg/g	1.0	9/12/05	9/12/05
Tert-butyl alcohol (TBA)	ND	0.50	µg/g	1.0	9/12/05	9/12/05
Di-isopropyl ether (DIPE)	ND	0.020	µg/g	1.0	9/12/05	9/12/05
Ethyl tert-butyl ether (ETBE)	ND	0.020	µg/g	1.0	9/12/05	9/12/05
Benzene	ND	0.0050	µg/g	1.0	9/12/05	9/12/05
Tert-amyl methyl ether (TAME)	ND	0.020	µg/g	1.0	9/12/05	9/12/05
Toluene	ND	0.0050	µg/g	1.0	9/12/05	9/12/05
Ethylbenzene	ND	0.0050	µg/g	1.0	9/12/05	9/12/05
m,p-Xylene	ND	0.010	µg/g	1.0	9/12/05	9/12/05
o-Xylene	ND	0.0050	µg/g	1.0	9/12/05	9/12/05
Surrogate: 1,4-Dichlorobenzene-d4	149	80-120	% Rec	1.0	9/12/05	9/12/05

Test Name: TPH as Gasoline **Reference:** LUFT/EPA 8260B Modified

Parameter	Result	Limit	Units	DF	Extracted	Analyzed
TPHC Gasoline	ND	1.0	µg/g	1.0	9/12/05	9/12/05

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Date: 14-Sep-05
WorkOrder: 0509030

ANALYTICAL REPORT

Client Sample ID: B-203 @ 10-11'
Lab ID: 0509030-03A
Received: 9/1/05
Collected: 8/31/05 11:15

Test Name: Gasoline Components/Additives
Reference: LUFT/EPA 8260B Modified

Parameter	Result	Limit	Units	DF	Extracted	Analyzed
Methyl tert-butyl ether (MTBE)	ND	0.025	µg/g	1.0	9/12/05	9/12/05
Tert-butyl alcohol (TBA)	ND	0.50	µg/g	1.0	9/12/05	9/12/05
Di-isopropyl ether (DIPE)	ND	0.020	µg/g	1.0	9/12/05	9/12/05
Ethyl tert-butyl ether (ETBE)	ND	0.020	µg/g	1.0	9/12/05	9/12/05
Benzene	ND	0.0050	µg/g	1.0	9/12/05	9/12/05
Tert-amyl methyl ether (TAME)	ND	0.020	µg/g	1.0	9/12/05	9/12/05
Toluene	ND	0.0050	µg/g	1.0	9/12/05	9/12/05
Ethylbenzene	ND	0.0050	µg/g	1.0	9/12/05	9/12/05
m,p-Xylene	ND	0.010	µg/g	1.0	9/12/05	9/12/05
o-Xylene	ND	0.0050	µg/g	1.0	9/12/05	9/12/05
Surrogate: 1,4-Dichlorobenzene-d4	152	80-120	% Rec	1.0	9/12/05	9/12/05

Test Name: TPH as Gasoline
Reference: LUFT/EPA 8260B Modified

Parameter	Result	Limit	Units	DF	Extracted	Analyzed
TPHC Gasoline	ND	1.0	µg/g	1.0	9/12/05	9/12/05

Client Sample ID: B-201
Lab ID: 0509030-04A
Received: 9/1/05
Collected: 8/31/05 10:10

Test Name: Gasoline Components/Additives
Reference: LUFT/EPA 8260B Modified

Parameter	Result	Limit	Units	DF	Extracted	Analyzed
Methyl tert-butyl ether (MTBE)	ND	1.0	µg/L	1.0		9/7/05
Tert-butyl alcohol (TBA)	ND	10	µg/L	1.0		9/7/05
Di-isopropyl ether (DIPE)	ND	1.0	µg/L	1.0		9/7/05
Ethyl tert-butyl ether (ETBE)	ND	1.0	µg/L	1.0		9/7/05
Benzene	ND	0.50	µg/L	1.0		9/7/05
Tert-amyl methyl ether (TAME)	ND	1.0	µg/L	1.0		9/7/05
Toluene	ND	0.50	µg/L	1.0		9/7/05
Ethylbenzene	ND	0.50	µg/L	1.0		9/7/05
m,p-Xylene	ND	0.50	µg/L	1.0		9/7/05
o-Xylene	ND	0.50	µg/L	1.0		9/7/05
Surrogate: 1,4-Dichlorobenzene-d4	105	80.8-139	% Rec	1.0		9/7/05

Test Name: TPH as Gasoline
Reference: LUFT/EPA 8260B Modified

Parameter	Result	Limit	Units	DF	Extracted	Analyzed
TPHC Gasoline	85	50	µg/L	1.0		9/7/05

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Date: 14-Sep-05
WorkOrder: 0509030

ANALYTICAL REPORT

Client Sample ID: B-202 **Received:** 9/1/05 **Collected:** 8/31/05 12:10
Lab ID: 0509030-05A

Test Name: Gasoline Components/Additives **Reference:** LUFT/EPA 8260B Modified

Parameter	Result	Limit	Units	DF	Extracted	Analyzed
Methyl tert-butyl ether (MTBE)	ND	1.0	µg/L	1.0		9/7/05
Tert-butyl alcohol (TBA)	ND	10	µg/L	1.0		9/7/05
Di-isopropyl ether (DIPE)	ND	1.0	µg/L	1.0		9/7/05
Ethyl tert-butyl ether (ETBE)	ND	1.0	µg/L	1.0		9/7/05
Benzene	ND	0.50	µg/L	1.0		9/7/05
Tert-amyl methyl ether (TAME)	ND	1.0	µg/L	1.0		9/7/05
Toluene	ND	0.50	µg/L	1.0		9/7/05
Ethylbenzene	ND	0.50	µg/L	1.0		9/7/05
m,p-Xylene	ND	0.50	µg/L	1.0		9/7/05
o-Xylene	ND	0.50	µg/L	1.0		9/7/05
Surrogate: 1,4-Dichlorobenzene-d4	106	80.8-139	% Rec	1.0		9/7/05

Test Name: TPH as Gasoline **Reference:** LUFT/EPA 8260B Modified

Parameter	Result	Limit	Units	DF	Extracted	Analyzed
TPHC Gasoline	ND	50	µg/L	1.0		9/7/05

Client Sample ID: B-203 **Received:** 9/1/05 **Collected:** 8/31/05 12:25
Lab ID: 0509030-06A

Test Name: Gasoline Components/Additives **Reference:** LUFT/EPA 8260B Modified

Parameter	Result	Limit	Units	DF	Extracted	Analyzed
Methyl tert-butyl ether (MTBE)	ND	1.0	µg/L	1.0		9/7/05
Tert-butyl alcohol (TBA)	ND	10	µg/L	1.0		9/7/05
Di-isopropyl ether (DIPE)	ND	1.0	µg/L	1.0		9/7/05
Ethyl tert-butyl ether (ETBE)	ND	1.0	µg/L	1.0		9/7/05
Benzene	ND	0.50	µg/L	1.0		9/7/05
Tert-amyl methyl ether (TAME)	ND	1.0	µg/L	1.0		9/7/05
Toluene	ND	0.50	µg/L	1.0		9/7/05
Ethylbenzene	ND	0.50	µg/L	1.0		9/7/05
m,p-Xylene	ND	0.50	µg/L	1.0		9/7/05
o-Xylene	ND	0.50	µg/L	1.0		9/7/05
Surrogate: 1,4-Dichlorobenzene-d4	106	80.8-139	% Rec	1.0		9/7/05

Test Name: TPH as Gasoline **Reference:** LUFT/EPA 8260B Modified

Parameter	Result	Limit	Units	DF	Extracted	Analyzed
TPHC Gasoline	ND	50	µg/L	1.0		9/7/05

NORTH COAST LABORATORIES
5680 West End Road • Arcata, California 95521-9202 • 707-822-4649 • FAX 707-822-6831

North Coast Laboratories, Ltd.

Date: 14-Sep-05

CLIENT: SHN Consulting Engineers and Geologists
Work Order: 0509030
Project: 092057, Branscomb Store

QC SUMMARY REPORT
Method Blank

Sample ID **MB-14196** Batch ID: **14196** Test Code: **8260OXYS** Units: **µg/g** Analysis Date **9/12/05 6:42:00 AM** Prep Date **9/12/05**
Client ID: Run ID: **ORGCMS2_050912A** SeqNo: **530489**

Analyte	Result	Limit	SPK value	SPK Ref Val	% Rec	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Methyl tert-butyl ether (MTBE)	ND	0.025	0	0	0%	0	0	0			
Tert-butyl alcohol (TBA)	ND	0.50	0	0	0%	0	0	0			
Di-isopropyl ether (DIPE)	ND	0.020	0	0	0%	0	0	0			
Ethyl tert-butyl ether (ETBE)	ND	0.020	0	0	0%	0	0	0			
Benzene	0.001882	0.0050	0	0	0%	0	0	0			J
Tert-amyl methyl ether (TAME)	0.004974	0.020	0	0	0%	0	0	0			J
Toluene	ND	0.0050	0	0	0%	0	0	0			
Ethylbenzene	ND	0.0050	0	0	0%	0	0	0			
m,p-Xylene	ND	0.010	0	0	0%	0	0	0			
o-Xylene	ND	0.0050	0	0	0%	0	0	0			
1,4-Dichlorobenzene-d4	1.51	0.10	1.00	0	151%	80	120	0			S

Sample ID **MB 090605** Batch ID: **R36788** Test Code: **8260OXYW** Units: **µg/L** Analysis Date **9/6/05 7:00:00 AM** Prep Date
Client ID: Run ID: **ORGCMS3_050906B** SeqNo: **529260**

Analyte	Result	Limit	SPK value	SPK Ref Val	% Rec	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Methyl tert-butyl ether (MTBE)	ND	1.0									
Tert-butyl alcohol (TBA)	ND	10									
Di-isopropyl ether (DIPE)	ND	1.0									
Ethyl tert-butyl ether (ETBE)	ND	1.0									
Benzene	ND	0.50									
Tert-amyl methyl ether (TAME)	ND	1.0									
Toluene	ND	0.50									
Ethylbenzene	0.08049	0.50									J
m,p-Xylene	0.1793	0.50									J
o-Xylene	ND	0.50									
1,4-Dichlorobenzene-d4	1.03	0.10	1.00	0	103%	81	139	0			

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
B - Analyte detected in the associated Method Blank

CLIENT: SHN Consulting Engineers and Geologists
Work Order: 0509030
Project: 092057, Branscomb Store

QC SUMMARY REPORT
Method Blank

Sample ID **MB-14196**	Batch ID: **14196**	Test Code: **GASS-MS**	Units: **µg/g**	Analysis Date **9/12/05 6:42:00 AM**	Prep Date **9/12/05**
Client ID:		Run ID: **ORGCMS2_050912C**		SeqNo: **530692**	

Analyte	Result	Limit	SPK value	SPK Ref Val	% Rec	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
TPHC Gasoline	ND	1.0									

Sample ID **MB 090605**	Batch ID: **R36786**	Test Code: **GASW-MS**	Units: **µg/L**	Analysis Date **9/6/05 7:00:00 AM**	Prep Date
Client ID:		Run ID: **ORGCMS3_050906A**		SeqNo: **529205**	

Analyte	Result	Limit	SPK value	SPK Ref Val	% Rec	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
TPHC Gasoline	17.22	50									J

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
B - Analyte detected in the associated Method Blank

North Coast Laboratories, Ltd.

Date: 14-Sep-05

CLIENT: SHN Consulting Engineers and Geologists
Work Order: 0509030
Project: 092057, Branscomb Store

QC SUMMARY REPORT

Laboratory Control Spike

Sample ID **LCS-14196** Batch ID: **14196** Test Code: **8260OXYS** Units: **µg/g** Analysis Date **9/12/05 3:39:00 AM** Prep Date **9/12/05**
Client ID: Run ID: **ORGCMS2_050912A** SeqNo: **530487**

Analyte	Result	Limit	SPK value	SPK Ref Val	% Rec	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Methyl tert-butyl ether (MTBE)	0.4813	0.025	0.400	0	120%	86	137	0			
Tert-butyl alcohol (TBA)	14.74	0.50	8.00	0	184%	43	185	0			
Di-isopropyl ether (DIPE)	0.4866	0.020	0.400	0	122%	80	137	0			
Ethyl tert-butyl ether (ETBE)	0.6019	0.020	0.400	0	150%	81	133	0			S
Benzene	0.4977	0.0050	0.400	0	124%	74	137	0			
Tert-amyl methyl ether (TAME)	0.4677	0.020	0.400	0	117%	81	135	0			
Toluene	0.5082	0.0050	0.400	0	127%	69	139	0			
Ethylbenzene	0.5282	0.0050	0.400	0	132%	77	139	0			
m,p-Xylene	1.024	0.010	0.800	0	128%	74	147	0			
o-Xylene	0.5009	0.0050	0.400	0	125%	62	147	0			
1,4-Dichlorobenzene-d4	1.55	0.10	1.00	0	155%	80	120	0			S

Sample ID **LCSD-14196** Batch ID: **14196** Test Code: **8260OXYS** Units: **µg/g** Analysis Date **9/12/05 4:10:00 AM** Prep Date **9/12/05**
Client ID: Run ID: **ORGCMS2_050912A** SeqNo: **530488**

Analyte	Result	Limit	SPK value	SPK Ref Val	% Rec	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Methyl tert-butyl ether (MTBE)	0.5113	0.025	0.400	0	128%	86	137	0.481	6.06%	20	
Tert-butyl alcohol (TBA)	10.30	0.50	8.00	0	129%	43	185	14.7	35.4%	20	R
Di-isopropyl ether (DIPE)	0.5192	0.020	0.400	0	130%	80	137	0.487	6.49%	20	
Ethyl tert-butyl ether (ETBE)	0.6416	0.020	0.400	0	160%	81	133	0.602	6.38%	20	S
Benzene	0.5285	0.0050	0.400	0	132%	74	137	0.498	6.00%	20	
Tert-amyl methyl ether (TAME)	0.5052	0.020	0.400	0	126%	81	135	0.468	7.71%	20	
Toluene	0.5247	0.0050	0.400	0	131%	69	139	0.508	3.21%	20	
Ethylbenzene	0.5468	0.0050	0.400	0	137%	77	139	0.528	3.46%	20	
m,p-Xylene	1.094	0.010	0.800	0	137%	74	147	1.02	6.60%	20	
o-Xylene	0.5259	0.0050	0.400	0	131%	62	147	0.501	4.88%	20	
1,4-Dichlorobenzene-d4	1.55	0.10	1.00	0	155%	80	120	1.55	0.0559%	15	S

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
B - Analyte detected in the associated Method Blank

CLIENT: SHN Consulting Engineers and Geologists
Work Order: 0509030
Project: 092057, Branscomb Store

QC SUMMARY REPORT
Laboratory Control Spike

Sample ID **LCS-05562** Batch ID: **R36788** Test Code: **8260OXYW** Units: **µg/L** Analysis Date **9/6/05 3:36:00 AM** Prep Date
Client ID: Run ID: **ORGCMS3_050906B** SeqNo: **529257**

Analyte	Result	Limit	SPK value	SPK Ref Val	% Rec	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Methyl tert-butyl ether (MTBE)	19.85	1.0	20.0	0	99.3%	80	120	0			
Tert-butyl alcohol (TBA)	402.0	10	400	0	100%	25	162	0			
Di-isopropyl ether (DIPE)	19.78	1.0	20.0	0	98.9%	80	120	0			
Ethyl tert-butyl ether (ETBE)	19.98	1.0	20.0	0	99.9%	77	120	0			
Benzene	21.27	0.50	20.0	0	106%	78	117	0			
Tert-amyl methyl ether (TAME)	18.85	1.0	20.0	0	94.2%	64	136	0			
Toluene	20.62	0.50	20.0	0	103%	80	120	0			
Ethylbenzene	19.90	0.50	20.0	0	99.5%	80	120	0			
m,p-Xylene	40.73	0.50	40.0	0	102%	80	120	0			
o-Xylene	18.31	0.50	20.0	0	91.5%	80	120	0			
1,4-Dichlorobenzene-d4	1.10	0.10	1.00	0	110%	81	139	0			

Sample ID **LCSD-05562** Batch ID: **R36788** Test Code: **8260OXYW** Units: **µg/L** Analysis Date **9/6/05 4:01:00 AM** Prep Date
Client ID: Run ID: **ORGCMS3_050906B** SeqNo: **529258**

Analyte	Result	Limit	SPK value	SPK Ref Val	% Rec	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Methyl tert-butyl ether (MTBE)	19.58	1.0	20.0	0	97.9%	80	120	19.8	1.37%	20	
Tert-butyl alcohol (TBA)	380.8	10	400	0	95.2%	25	162	402	5.40%	20	
Di-isopropyl ether (DIPE)	19.95	1.0	20.0	0	99.8%	80	120	19.8	0.865%	20	
Ethyl tert-butyl ether (ETBE)	19.56	1.0	20.0	0	97.8%	77	120	20.0	2.08%	20	
Benzene	20.92	0.50	20.0	0	105%	78	117	21.3	1.66%	20	
Tert-amyl methyl ether (TAME)	18.59	1.0	20.0	0	93.0%	64	136	18.8	1.37%	20	
Toluene	20.52	0.50	20.0	0	103%	80	120	20.6	0.464%	20	
Ethylbenzene	19.81	0.50	20.0	0	99.1%	80	120	19.9	0.444%	20	
m,p-Xylene	40.30	0.50	40.0	0	101%	80	120	40.7	1.06%	20	
o-Xylene	18.14	0.50	20.0	0	90.7%	80	120	18.3	0.926%	20	
1,4-Dichlorobenzene-d4	1.09	0.10	1.00	0	109%	81	139	1.10	1.11%	20	

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
B - Analyte detected in the associated Method Blank

CLIENT: SHN Consulting Engineers and Geologists
Work Order: 0509030
Project: 092057, Branscomb Store

QC SUMMARY REPORT
Laboratory Control Spike

Sample ID **LCSG-14196** Batch ID: **14196** Test Code: **GASS-MS** Units: **µg/g** Analysis Date **9/12/05 5:11:00 AM** Prep Date **9/12/05**
Client ID: Run ID: **ORGCMS2_050912C** SeqNo: **530690**

Analyte	Result	Limit	SPK value	SPK Ref Val	% Rec	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
TPHC Gasoline	18.00	1.0	20.0	0	90.0%	77	124	0			

Sample ID **LCSDG-14196** Batch ID: **14196** Test Code: **GASS-MS** Units: **µg/g** Analysis Date **9/12/05 5:41:00 AM** Prep Date **9/12/05**
Client ID: Run ID: **ORGCMS2_050912C** SeqNo: **530691**

Analyte	Result	Limit	SPK value	SPK Ref Val	% Rec	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
TPHC Gasoline	17.91	1.0	20.0	0	89.6%	77	124	18.0	0.469%	20	

Sample ID **LCS-05563** Batch ID: **R36786** Test Code: **GASW-MS** Units: **µg/L** Analysis Date **9/6/05 5:18:00 AM** Prep Date
Client ID: Run ID: **ORGCMS3_050906A** SeqNo: **529202**

Analyte	Result	Limit	SPK value	SPK Ref Val	% Rec	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
TPHC Gasoline	929.3	50	1,000	0	92.9%	80	120	0			

Sample ID **LCSD-05563** Batch ID: **R36786** Test Code: **GASW-MS** Units: **µg/L** Analysis Date **9/6/05 5:43:00 AM** Prep Date
Client ID: Run ID: **ORGCMS3_050906A** SeqNo: **529203**

Analyte	Result	Limit	SPK value	SPK Ref Val	% Rec	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
TPHC Gasoline	921.4	50	1,000	0	92.1%	80	120	929	0.855%	20	

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
B - Analyte detected in the associated Method Blank

NORTH COAST LABORATORIES LTD.
5680 West End Road • Arcata • CA 95521-9202
707-822-4649 Fax 707-822-6831

Chain of Custody

LABORATORY NUMBER: 0509030

Attention: Frans LowMAN
Results & Invoice to: SHN
Address: 812 West Wabash Avenue
Eureka, CA 95501
Phone: 441-8855
Copies of Report to:

Sampler (Sign & Print): Aaron Melady Aaron Melady

TAT: ☐ 24 Hr ☐ 48 Hr ☐ 5 Day ☐ 5–7 Day
☒ STD (2–3 Wk) ☐ Other:
PRIOR AUTHORIZATION IS REQUIRED FOR RUSHES

REPORTING REQUIREMENTS: State Forms ☐
Preliminary: FAX ☒ Verbal ☐ By:__/__/__
Final Report: FAX ☐ Verbal ☐ By:__/__/__

PROJECT INFORMATION
Project Number: 092057
Project Name: Branscomb Store
Purchase Order Number:

LAB ID	SAMPLE ID	DATE	TIME	MATRIX*	CONTAINER	PRESERVATIVE	ANALYSIS
	B-201@13-14'	8-31-05	1000	S	9/4		8260 List 1
	B-202@13-14'	"	1110	S			1
	B-203@10-11'	"	1115	S			1
	B-201	"	1010	GW			3
	B-202	"	1210	GW			3
	B-203	"	1225	GW			3

CONTAINER CODES: 1—½ gal. pl; 2—250 ml pl; 3—500 ml pl; 4—1 L Nalgene; 5—250 ml BG; 6—500 ml BG; 7—1 L BG; 8—1 L cg; 9—40 ml VOA; 10—125 ml VOA; 11—4 oz glass jar; 12—8 oz glass jar; 13—brass tube; 14—other

PRESERVATIVE CODES: a—HNO_3; b—HCl; c—H_2SO_4; d—$Na_2S_2O_3$; e—NaOH; f—$C_2H_3O_2Cl$; g—other

SAMPLE CONDITION/SPECIAL INSTRUCTIONS

EDF

Global ID# T0604591179

Cooler temp = 3.8°C

RELINQUISHED BY (Sign & Print)	DATE/TIME	RECEIVED BY (Sign)	DATE/TIME
Aaron Melady Aaron Melady	8-31-05 1640	Jennifer Mundy	9-1-05 11:00

SAMPLE DISPOSAL
☒ NCL Disposal of Non-Contaminated
☐ Return ☐ Pickup

CHAIN OF CUSTODY SEALS Y/N/NA
SHIPPED VIA: UPS Air-Ex Fed-Ex Bus Hand

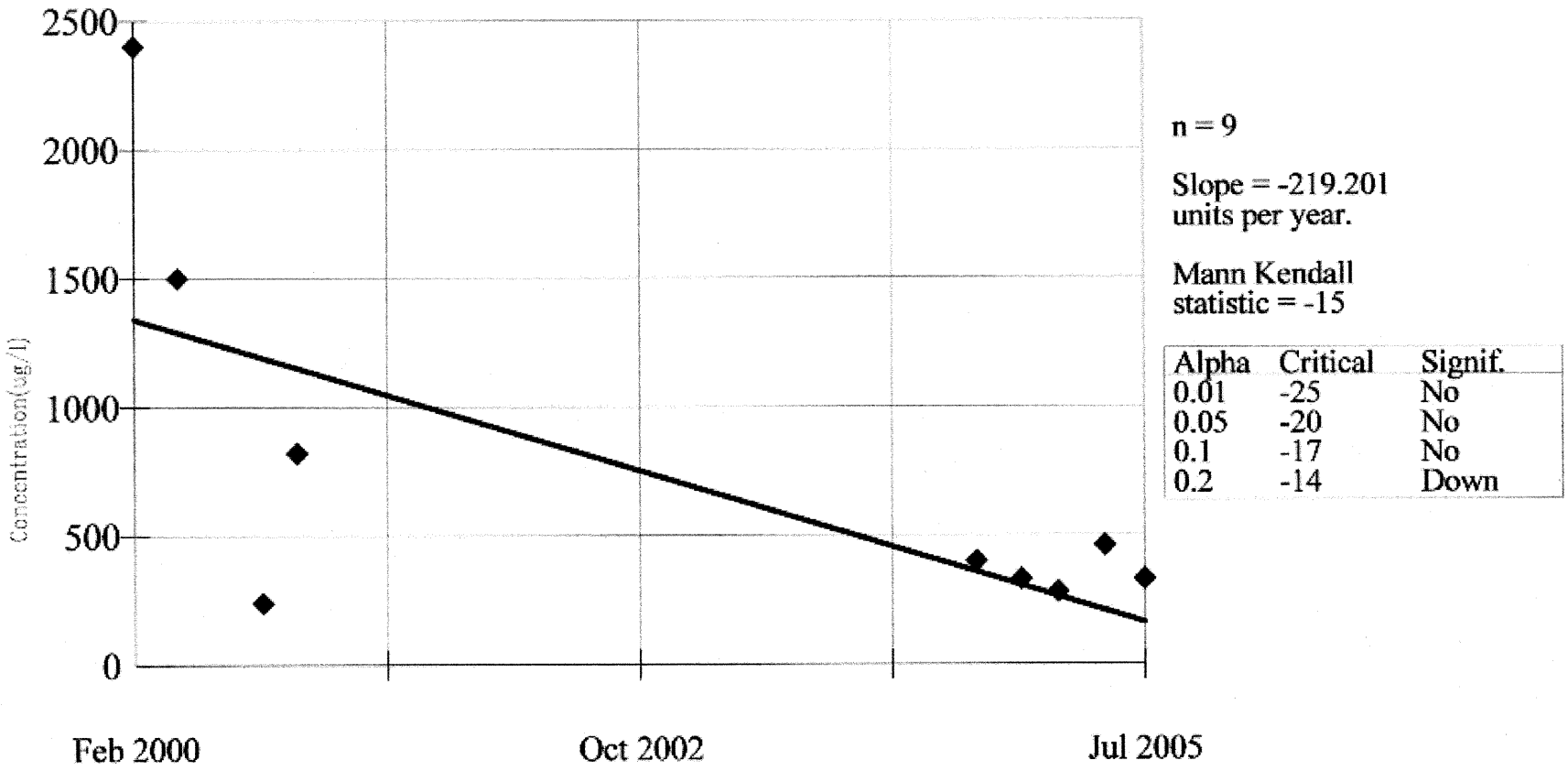
***MATRIX:** DW=Drinking Water; Eff=Effluent; Inf=Influent; SW=Surface Water; GW=Ground Water; S=Soil; O=Other.

ALL CONTAMINATED NON-AQUEOUS SAMPLES WILL BE RETURNED TO CLIENT

Appendix D

Mann-Kendall Graph

SEN'S SLOPE ESTIMATOR
MW-2



n = 9

Slope = -219.201
units per year.

Mann Kendall
statistic = -15

Alpha	Critical	Signif.
0.01	-25	No
0.05	-20	No
0.1	-17	No
0.2	-14	Down

Constituent: TPHG (ug/l)

Date: 10/19/05

Facility: Branscomb

Time: 11:31 AM

Data File: BRANSC~1

View: branscomb store

SEN'S SLOPE MW-2 (data)

Constituent: TPHG (ug/l) | Facility: Branscomb | Data File: BRANSC~1

Date: 10/19/05 | Time: 11:31 AM | View: branscomb store

Date	MW-2
02/22/00	2400
05/16/00	1500
10/27/00	240
01/02/01	820
08/13/04	400
11/08/04	330
01/19/05	280
04/20/05	460
07/06/05	330